

REMARKS

The Examiner rejected all claims under 35 USC § 103(a) as being unpatentable over Chen, U.S. Patent 6, 416,531 ('531) in view of Butler, U.S. Patent 7,201,766 ('766).

Only claim 24 was amended to correct a typographical error. The second reference ('766) proffered by the examiner was issued in April 2007 and its first published version was in February, 2006. Since the present invention was filed in January, 2004, over 2 years before the earliest public record, the art in Butler cannot be used to demonstrate obviousness, as it was not publicly known or available prior to the filing of present invention. Beyond that its mere use of programmable computer does not address the novel and non-obvious objects of the present invention as currently claimed. Details are provided below.

Chen in '531 deals with multiple fibers from a single source or a number of LEDs attached to multiple probes. In neither case is the present invention described, nor anticipated as might be mistakenly implied by the examiners description on page 2 of the Office Action. In the specification (page 4, lines 21ff) the deficiencies of using splitters is the lack of an ability to individually control the power output from each probe. While having large numbers of light sources on a probe that enters the body tissue makes the probes needlessly cumbersome, potentially expensive, and open to degradation in use without ease to replace without disturbing or distressing the patient.

The present invention first described (specification page 5, lines 23ff) has a radiation source containing a number of diodes units, wherein both a number of individual emitters' output are combined to each output port and a computer/control unit can set the power available from each port individually and each delivery system can be calibrated individually as well. Further to the point of presently presented claim 1 and the rest of the set, the key benefits and operation of the present invention are well described on page 8 line 3-8:

"The ability to independently control the radiation power has significant effects in producing a treatment that can effectively irradiate diseased tissue while leaving healthy tissue as unaffected as possible. Radiation unintentionally applied to healthy tissue can cause significant damage to healthy tissue, whether through thermal damage or interaction

with any remaining photosensitizer that has not completely left the tissue. For these reasons, it is important to reduce the amount of radiation that affects healthy tissue.” and exemplified in the example described on page 8 lines 9ff. In the latter section is illustrated how the interstitial fibers interior to the ‘mass’ to be treated should be higher in power to insure destruction of the diseased tissue while in this example, the patient is benefitted also by having the interstitial fibers nearer healthy tissue emitting lower power so less is available to harm the healthy tissue beyond the treatment site.

Chen does not appreciate, teach or imply any of these details nor these benefits. Butler even if he applied also provides little to Chen other than the mere use of a programmable source. The applicant, who has many inventions patented in this area of medical devices, also has some inventions using computer control. As described in the specification and briefly sketched above, the present invention, as claimed, uses as one aspect of it the use of a control unit, which can be a computer or the like, but the details of the preferred embodiments, as described in the specification and claims illustrate indeed the novel and non-obvious aspects of using individually controlled output ports, which in turn may have multiple light sources per port, that can also be individually calibrated. Adding the ability to replace individual emitters without stopping treatment or inconveniencing the patient truly separates the present invention from any such medical device available or imagined at the time of its filing.


In summary, what ‘531, or any of the other patents offered by the examiner, do not teach nor imply is that it would be good idea to have a set of independent sources coupled to individual output ports with a ‘delivery’ waveguide to provide one or more fibers that can be individually placed into the interior of a tumor/treatment site to controllably radiate the site from the inside out (by definition as to how interstitial irradiation works). Further the sets of fibers can deliver different preselected powers and wavelengths dependent on where within the treatment site the distal ends are positioned (see e.g. p8 lines 3ff).

With these remarks and changes it is believed that the requirements of 35 USC § 103(a) have been answered and the disclosure and claims are now in condition for allowance. Consideration is respectfully requested. An early and favorable response is earnestly solicited. Thank you.

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Respectfully submitted,

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